Jennifer Wortman Vaughan

Microsoft Research, New York City
641 Avenue of the Americas, 7th Floor
New York, NY 10011

jenn@microsoft.com
jenn@jennwv.com
http://jennwv.com

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Research Interests

My background is in machine learning and algorithmic economics. I am especially interested in the interaction between people and AI. I have often studied this interaction in the context of prediction markets and other crowdsourcing systems. My passion is for AI that augments, rather than replaces, human abilities. A big fraction of my work has been theoretical, but I've begun incorporating more experiments into my research in order to better understand and model human behavior in technological systems. I occasionally speak about societal issues around AI, and lately I've been spending the majority of my time on fair and interpretable machine learning.

Education

University of Pennsylvania, Philadelphia, PA

> Ph.D., Computer and Information Science, August 2009
> > Dissertation: *Learning from Collective Preferences, Behavior, and Beliefs*
> > Advisor: Michael Kearns

> M.S.E., Computer and Information Science, August 2006

Stanford University, Stanford, CA

> M.S., Computer Science (Specialization in AI), September 2004

Boston University, Boston, MA

> B.A., Computer Science, Magna Cum Laude, May 2002

Employment

Microsoft Research, New York, NY

> Senior Researcher, Microsoft Research New York City, September 2015–Present
> Researcher, Microsoft Research New York City, October 2012–September 2015

University of California, Los Angeles, Los Angeles, CA

> Adjunct Assistant Professor, Computer Science Department, July 2014–June 2016
> Assistant Professor (on leave), July 2009–September 2010 and September 2012–June 2014
> Assistant Professor (active), Computer Science Department, September 2010–September 2012

Harvard University, Cambridge, MA

> Computing Innovation Fellow (Postdoc), September 2009–August 2010

Google, New York, NY
   Intern, Research Group, June 2008–September 2008

Yahoo!, New York, NY
   Intern, Yahoo! Research, May 2007–August 2007

SiteAdvisor, Boston, MA
   Consultant, May 2005–November 2005

Stanford University, Stanford, CA
   Research Assistant, March 2003–August 2004

Intuit, Waltham, MA
   Developer (part time/summer position in college), May 2000–August 2002

Teaching Experience

Tutorial Presentations

   Challenges of Incorporating Algorithmic Fairness into Industry Practice, FAT* 2019
    (with Henriette Cramer, Kenneth Holstein, Hal Daumé III, Miroslav Dudík, Hanna Wallach,
    Jean Garcia-Gathright, and Sravana Reddy)

   Machine Learning & Fairness, internal Machine Learning class at Microsoft, October 2018
    (with Hanna Wallach)

   Making Better Use of the Crowd, KDD 2017

   Making Better Use of the Crowd, ACL 2017

   Crowdsourcing: Beyond Label Generation, NIPS 2016

   Prediction, Belief, and Markets, AAAI 2013 (with Jake Abernethy)

   Prediction, Belief, and Markets, KDD 2012 (with Jake Abernethy)

   Learning and Markets, Santa Cruz Machine Learning Summer School, 2012

   Prediction, Belief, and Markets, ICML 2012 (with Jake Abernethy)

Courses Taught

   CS 112: Modeling Uncertainty in Information Systems, UCLA, Spring 2011 and 2012
   Upper division undergraduate course covering the basics of probability, Markov chains, and
    statistical inference. Previously titled *Computer System Modeling Fundamentals*.

   CS 260: Machine Learning Theory, UCLA, Fall 2010 and 2011
   New graduate course designed in Fall 2010. Covers the theoretical foundations of machine
    learning, including the PAC model, online learning, SVMs, and boosting.

   CS 269: Mathematical Frameworks for Social Computing, UCLA, Winter 2012
   Seminar-style course exploring theoretical models and algorithms for social computing.

Courses TAed

   CSE 112: Networked Life, University of Pennsylvania, Spring 2006
   CIS 520: Artificial Intelligence and Machine Learning, University of Pennsylvania, Fall 2005

Additional Instruction/Mentorship

Data Science Summer School, Microsoft Research, New York City, Summer 2015
Intensive eight-week hands-on introduction to data science for college students in the New York City area aimed at increasing diversity in computer science.

Additional Guest Lectures

Designing the Digital Economy, internal Microsoft course, March 2017
Networks, Crowds, and Markets, NYU Stern, Spring 2013
Introduction to Data Science, Columbia University, Fall 2013

Journal Articles

Making Better Use of the Crowd. Jennifer Wortman Vaughan. *Journal of Machine Learning Research*, 18(193):1–46, 2018.

Adaptive Contract Design for Crowdsourcing Markets: Bandit Algorithms for Repeated Principal-Agent Problems. Chien-Ju Ho, Aleksandrs Slivkins, and Jennifer Wortman Vaughan. *Journal of Artificial Intelligence Research*, 55:317–359, 2016.

Belief Aggregation with Automated Market Makers. Rajiv Sethi and Jennifer Wortman Vaughan. *Computational Economics*, 48(1):155–178, 2016.

An Axiomatic Characterization of Wagering Mechanisms. Nicolas S. Lambert, John Langford, Jennifer Wortman Vaughan, Yiling Chen, Daniel Reeves, Yoav Shoham, and David M. Pennock. *Journal of Economic Theory*, 156:389–416, 2015.

Computational social science and social computing. (Guest editorial) Winter Mason, Jennifer Wortman Vaughan, and Hanna Wallach. *Machine Learning Journal (Special Issue on Computational Social Science and Social Computing)*, 95(3):257–260, 2014.

Efficient Market Making via Convex Optimization, and a Connection to Online Learning. Jacob Abernethy, Yiling Chen, and Jennifer Wortman Vaughan. *ACM Transactions on Economics and Computation*, 1(2):Article 12, 2013.

A Theory of Learning from Different Domains. Shai Ben-David, John Blitzer, Koby Crammer, Alex Kulesza, Fernando Pereira, and Jennifer Wortman Vaughan. *Machine Learning Journal (Special Issue on Learning from Multiple Sources)*, 79(1–2):151–175, 2010.

The True Sample Complexity of Active Learning. Maria-Florina Balcan, Steve Hanneke, and Jennifer Wortman Vaughan. *Machine Learning Journal (Special Issue on COLT 2008)*, 80(2–3):111–139, 2010.

Maintaining Equilibria During Exploration in Sponsored Search Auctions. John Langford, Lihong Li, Yevgeniy Vorobeychik, and Jennifer Wortman. *Algorithmica (Special Issue on Internet Markets)*, 58(4): 990–1021, 2010.

Behavioral Experiments on Biased Voting in Networks. Michael Kearns, Stephen Judd, Jinsong Tan, and Jennifer Wortman. *Proceedings of the National Academy of Sciences*, 106(5):1347–1352, 2009.

Learning from Multiple Sources. Koby Crammer, Michael Kearns, and Jennifer Wortman. *Journal of Machine Learning Research*, 9:1757–1774, 2008.

Regret to the Best Vs. Regret to the Average. Eyal Even-Dar, Michael Kearns, Yishay Mansour, and Jennifer Wortman. *Machine Learning Journal (Special Issue on COLT 2007)*, 72(1–2):21–37, 2008.

Magazine and Newsletter Articles

Incentives and the Crowd. Jennifer Wortman Vaughan. ACM XRDS (Crossroads), 24(1):42–46, September 2017.

Mathematical Foundations of Social Computing. Yiling Chen, Arpita Ghosh, Michael Kearns, Tim Roughgarden, and Jennifer Wortman Vaughan. Communications of the ACM, 9(12):102–108, December 2016.

Incentivizing High Quality Crowdwork. Chien-Ju Ho, Aleksandrs Slivkins, Siddharth Suri, and Jennifer Wortman Vaughan. *ACM SIGecom Exchanges*, 14(2), December 2015. (Based on the WWW 2015 paper.)

Online Decision Making in Crowdsourcing Markets: Theoretical Challenges. Aleksandrs Slivkins and Jennifer Wortman Vaughan. *ACM SIGecom Exchanges*, 12(2), December 2013.

Connections Between Markets and Learning. Yiling Chen and Jennifer Wortman Vaughan. *ACM SIGecom Exchanges*, 9(1), June 2010. (Based on the EC 2010 paper.)

Censored Exploration and the Dark Pool Problem. Kuzman Ganchev, Michael Kearns, Yuriy Nevmyvaka, and Jennifer Wortman Vaughan. *Communications of the ACM,* Research Highlights, May 2010. (Invited, based on the UAI 2009 paper.)

Conference Publications

Group Fairness for Indivisible Goods Allocation. Vincent Conitzer, Rupert Freeman, Nisarg Shah, and Jennifer Wortman Vaughan. To appear in the *Thirty-third AAAI Conference on Artificial Intelligence* (AAAI 2019).

An Equivalence Between Wagering and Fair-Division Mechanisms. Rupert Freeman, David Pennock, and Jennifer Wortman Vaughan. To appear in the *Thirty-third AAAI Conference on Artificial Intelligence* (AAAI 2019).

The Disparate Effects of Strategic Manipulation. Lily Hu, Nicole Immorlica, and Jennifer Wortman Vaughan. To appear in the *Second ACM Conference on Fairness, Accountability, and Transparency* (ACM FAT* 2019).

The Externalities of Exploration and How Data Diversity Helps Exploitation. Manish Raghavan, Aleksandrs Slivkins, Jennifer Wortman Vaughan, and Zhiwei Steven Wu. *Thirty-first Annual Conference on Learning Theory* (COLT 2018).

Incentive-Compatible Forecasting Competitions. Jens Witkowski, Rupert Freeman, Jennifer Wortman Vaughan, David Pennock, and Andreas Krause. *Thirty-second AAAI Conference on Artificial Intelligence* (AAAI 2018).

A Decomposition of Forecast Error in Prediction Markets. Miroslav Dudík, Sébastien Lahaie, Ryan Rogers, and Jennifer Wortman Vaughan. *Advances in Neural Information Processing Systems 30* (NIPS 2017).

Oracle-Efficient Learning and Auction Design. Miroslav Dudík, Nika Haghtalab, Haipeng Luo, Robert E. Schapire, Vasilis Syrgkanis, and Jennifer Wortman Vaughan. *Fifty-eighth Annual IEEE Symposium on Foundations of Computer Science* (FOCS 2017).

The Double Clinching Auction for Wagering. Rupert Freeman, David M. Pennock, and Jennifer Wortman Vaughan. *Eighteenth ACM Conference on Economics and Computation* (EC 2017).

Bounded Rationality in Wagering Mechanisms. David M. Pennock, Vasilis Syrgkanis, and Jennifer Wortman Vaughan. *Thirty-second Conference on Uncertainty in Artificial Intelligence* (UAI 2016).

The Possibilities and Limitations of Private Prediction Markets. Rachel Cummings, David M. Pennock, and Jennifer Wortman Vaughan. *Seventeenth ACM Conference on Economics and Computation* (EC 2016).

The Communication Network Within the Crowd. Ming Yin, Mary Gray, Siddharth Suri, and Jennifer Wortman Vaughan. *Twenty-fifth International World Wide Web Conference* (WWW 2016).

Integrating Market Makers, Limit Orders, and Continuous Trade in Prediction Markets. Hoda Heidari, Sébastien Lahaie, David Pennock, and Jennifer Wortman Vaughan. *Sixteenth ACM Conference on Economics and Computation* (EC 2015).

Incentivizing High Quality Crowdwork. Chien-Ju Ho, Aleksandrs Slivkins, Siddharth Suri, and Jennifer Wortman Vaughan. *Twenty-fourth International World Wide Web Conference* (WWW 2015).

Nominee for the Best Paper Award (8 papers out of 929 submissions).

Market Makers with Decreasing Utility for Information. Miroslav Dudík, Rafael Frongillo, and Jennifer Wortman Vaughan. *Thirtieth Conference on Uncertainty in Artificial Intelligence* (UAI 2014).

A General Volume-Parameterized Market Making Framework. Jacob Abernethy, Rafael Frongillo, Xiaolong Li, and Jennifer Wortman Vaughan. *Fifteenth ACM Conference on Economics and Computation* (EC 2014).

Removing Arbitrage from Wagering Mechanisms. Yiling Chen, Nikhil R. Devanur, David Pennock, and Jennifer Wortman Vaughan. *Fifteenth ACM Conference on Economics and Computation* (EC 2014).

Adaptive Contract Design for Crowdsourcing Markets: Bandit Algorithms for Repeated Principal-Agent Problems. Chien-Ju Ho, Aleksandrs Slivkins, and Jennifer Wortman Vaughan. *Fifteenth ACM Conference on Economics and Computation* (EC 2014).

An Axiomatic Characterization of Adaptive-Liquidity Market Makers. Xiaolong Li and Jennifer Wortman Vaughan. *Fourteenth ACM Conference on Electronic Commerce* (EC 2013).

Cost Function Market Makers for Measurable Spaces. Yiling Chen, Michael Ruberry, and Jennifer Wortman Vaughan. *Fourteenth ACM Conference on Electronic Commerce* (EC 2013).

Adaptive Task Assignment for Crowdsourced Classification. Chien-Ju Ho, Shahin Jabbari, and Jennifer Wortman Vaughan. *Thirtieth International Conference on Machine Learning* (ICML 2013).

Designing Informative Securities. Yiling Chen, Mike Ruberry, and Jennifer Wortman Vaughan. *Twenty-eighth Conference on Uncertainty in Artificial Intelligence* (UAI 2012).

Online Task Assignment in Crowdsourcing Markets. Chien-Ju Ho and Jennifer Wortman Vaughan. *Twenty-sixth AAAI Conference on Artificial Intelligence* (AAAI 2012).

An Optimization-Based Framework for Automated Market-Making. Jacob Abernethy, Yiling Chen, and Jennifer Wortman Vaughan. *Twelfth ACM Conference on Electronic Commerce* (EC 2011).

Evolution with Drifting Targets. Varun Kanade, Leslie G. Valiant, and Jennifer Wortman Vaughan. *Twenty-third Annual Conference on Learning Theory* (COLT 2010).

Regret Minimization with Concept Drift. Koby Crammer, Eyal Even-Dar, Yishay Mansour, and Jennifer Wortman Vaughan. *Twenty-third Annual Conference on Learning Theory* (COLT 2010).

A New Understanding of Prediction Markets Via No-Regret Learning. Yiling Chen and Jennifer Wortman Vaughan. *Eleventh ACM Conference on Electronic Commerce* (EC 2010).

Censored Exploration and the Dark Pool Problem. Kuzman Ganchev, Michael Kearns, Yuriy Nevmyvaka, and Jennifer Wortman Vaughan. *Twenty-fifth Conference on Uncertainty in Artificial Intelligence* (UAI 2009).
Winner of a Best Student Paper Award.

Complexity of Combinatorial Market Makers. Yiling Chen, Lance Fortnow, Nicolas Lambert, David Pennock, and Jennifer Wortman. *Ninth ACM Conference on Electronic Commerce* (EC 2008).

Self-Financed Wagering Mechanisms for Forecasting. Nicolas Lambert, John Langford, Jennifer Wortman, Yiling Chen, Daniel Reeves, Yoav Shoham, and David Pennock. *Ninth ACM Conference on Electronic Commerce* (EC 2008).
Winner of an Outstanding Paper Award.

Learning from Collective Behavior. Michael Kearns and Jennifer Wortman. *Twenty-first Annual Conference on Learning Theory* (COLT 2008).

The True Sample Complexity of Active Learning. Maria-Florina Balcan, Steve Hanneke, and Jennifer Wortman. *Twenty-first Annual Conference on Learning Theory* (COLT 2008).

> **Winner of a Best Student Paper Award.**

Exploration Scavenging. John Langford, Alexander Strehl, and Jennifer Wortman. *Twenty-fifth International Conference on Machine Learning* (ICML 2008).

Privacy-Preserving Belief Propagation and Sampling. Michael Kearns, Jinsong Tan, and Jennifer Wortman. *Advances in Neural Information Processing Systems 20* (NIPS 2007).

Learning Bounds for Domain Adaptation. John Blitzer, Koby Crammer, Alex Kulesza, Fernando Pereira, and Jennifer Wortman. *Advances in Neural Information Processing Systems 20* (NIPS 2007).

Maintaining Equilibria During Exploration in Sponsored Search Auctions. Jennifer Wortman, Yevgeniy Vorobeychik, Lihong Li, and John Langford. *Third International Workshop on Internet and Network Economics* (WINE 2007).

Sponsored Search with Contexts. Eyal Even-Dar, Michael Kearns, and Jennifer Wortman. *Third International Workshop on Internet and Network Economics* (WINE 2007).

Regret to the Best Vs. Regret to the Average. Eyal Even-Dar, Michael Kearns, Yishay Mansour, and Jennifer Wortman. *Twentieth Annual Conference on Learning Theory* (COLT 2007).

> **Winner of a Best Student Paper Award.**

Learning from Multiple Sources. Koby Crammer, Michael Kearns, and Jennifer Wortman. *Advances in Neural Information Processing Systems 19* (NIPS 2006).

Risk-Sensitive Online Learning. Eyal Even-Dar, Michael Kearns, and Jennifer Wortman. *Seventeenth International Conference on Algorithmic Learning Theory* (ALT 2006).

Learning from Data of Variable Quality. Koby Crammer, Michael Kearns, and Jennifer Wortman. *Advances in Neural Information Processing Systems 18* (NIPS 2005).

Run the GAMUT: A Comprehensive Approach to Evaluating Game-Theoretic Algorithms. Eugene Nudelman, Jennifer Wortman, Yoav Shoham, and Kevin Leyton-Brown. *Third International Conference on Autonomous Agents and Multi-Agent Systems* (AAMAS 2004).

Selected Workshop Papers

My research has appeared in many lightly peer-reviewed, non-archival workshops including:

ICML/IJCAI Workshop on Human Interpretability in Machine Learning, July 2018
Fairness, Accountability, and Transparency in Machine Learning (FATML), July 2018
EC Workshop on Opinion Aggregation, Dynamics, and Elicitation, June 2018
NIPS Workshop on Machine Learning for the Developing World, December 2017
NIPS Workshop on Transparent & Interpretable ML in Safety Critical Envs., December 2017
NIPS Workshop on Prioritising Online Content, December 2017
3rd EC Workshop on Algorithmic Game Theory and Data Science, June 2017
CHI Workshop on Designing for Uncertainty in HCI, May 2017

Conference on Digital Experimentation @ MIT, October 2016
2nd Annual International Conference on Computational Social Science (IC2S2), June 2016
ICML Workshop on Theory and Practice of Differential Privacy, June 2016
Conference on Digital Experimentation @ MIT, October 2015
5th EC Workshop on Social Computing and User Generated Content, June 2015
NIPS Workshop on Crowdsourcing: Theory, Algorithms, and Applications, December 2013
NSF/NBER/CEME Seminar in Math. Economics and General Equilibrium, October 2013
3rd EC Workshop on Social Computing and User Generated Content, June 2013
AAAI Fourth Human Computation Workshop (HCOMP 12), July 2012
ICML Workshop on Markets, Mechanisms, and Multi-agent Models, June 2012
NIPS Workshop on Domain Adaptation, December 2011
NIPS Workshop on Comp. Social Science and the Wisdom of Crowds, December 2010
NIPS Workshop on Advances in Ranking, December 2009
NIPS Workshop on Principles of Learning Problem Design, December 2007
DIMACS Workshop on the Boundary between Econ. Theory and CS, October 2007
Third Workshop on Sponsored Search Auctions at WWW, May 2007
NIPS Workshop on On-line Trading of Exploration and Exploitation, December 2006
15th International Conference on Game Theory at Stony Brook, July 2004
Many iterations of the New York Computer Science and Economics (NYCE) Day
Many iterations of the New York Academy of Sciences Machine Learning Symposium

Selected Invited Talks

Uncovering New Challenges in Fair and Interpretable Machine Learning

Google Research Seminar, New York, NY, May 2018

Building Fair and Transparent AI (And Why You Should Care)

Institute for Human Rights and Business briefing event, New York, NY, December 2017

Manipulating and Measuring Model Interpretability

NYU Tandon Machine Learning Reading Group, Brooklyn, NY, October 2018
Microsoft Design+AI Seminar Series, Redmond, WA, October 2018
NIPS Interpretable Machine Learning Symposium (*Invited*), Long Beach, CA, Dec. 2017

Nine Things I Wish I Had Known the First Time I Came to NIPS

12th Annual Women in Machine Learning Workshop (*Opening address*), Long Beach, CA, December 2017

The Role of Human Computation in AI, The Human Components of Machine Learning, or other similar variants

HRL Colloquium, Malibu, CA, January 2018
NYU NLP and Text as Data Speaker Series, New York, NY, November 2007
Spotify Research Seminar, New York, NY, November 2007
Yale Data Science Workshop on Computational Social Science (*Keynote*), New Haven, CT, October 2017
Broadening Participation in Data Mining (*Keynote*), Halifax, NS, August 2017
Microsoft Research NYC 5th Anniversary Celebration, New York, NY, May 2017

Self-Financed Wagering Mechanisms: What's Been Done and What's to Come

EC Workshop on Forecasting (*Invited*), Cambridge, MA, June 2017

Crowd Behavior and Implications on Research

CU Boulder Computer Science Colloquium, Boulder, CO, May 2017

The Role of Human Computation in Artificial Intelligence (short version)

AI: The Economic and Policy Implications panel on AI and Machine Learning 101, Technology Policy Institute, Washington, DC, Sept. 2016

The Communication Network Within the Crowd

NIPS Workshop on Crowdsourcing and ML (*Invited*), Barcelona, Spain, December 2016
Bloomberg Data Science Seminar, New York, NY, August 2016

The Past, Present, and Future of Women in Machine Learning

10th Annual Women in Machine Learning Workshop (*Opening address*), joint with Hanna Wallach and Amy Greenwald, Montreal, QC, December 2015

Crowdsourcing Your Data

Strata session on Hardcore Data Science (*Invited*), New York, NY, September 2015

Integrating Market Makers, Limit Orders, and Continuous Trade in Prediction Markets

International Symposium on Mathematical Programming (*Invited*), Pittsburgh, PA, July 2015

Incentivizing High Quality Crowdwork

NYU Machine Learning Seminar, New York, NY, February 2015
NIPS Workshop on Crowdsourcing and ML (*Invited*), Montreal, QC, December 2014

Market Making with Decreasing Value of Information

NIPS Workshop on Trans. ML and E-Commerce (*Invited*), Montreal, QC, December 2014
CMU-MSR Mindswap on the Interface Between CS and Econ, New York, NY, April 2014

An Optimization-Based Framework for Automated Market-Making, Combinatorial Prediction Markets via Convex Cost Functions, or other variants

New York Area Theory Day (*Invited*), Columbia, New York, NY, April 2015
Duke Machine Learning Seminar, Durham, NC, October 2014
Yahoo! Research, New York, NY, May 2014
NYU Courant Machine Learning Seminar, New York, NY, November 2012
LA Machine Learning Meetup, hosted by eHarmony, Santa Monica, CA, July 2012
Microsoft Research, New York, NY, July 2012
LogicBlox, Atlanta, GA, June 2012
Google Research, New York, NY, May 2012
Symantec Research Labs, Culver City, CA, April 2012
SoCal Symposium on Network Econ and Game Theory, Pasadena, CA, November 2011
Microsoft Research Algorithms and Game Theory Seminar, Cambridge, UK, June 2011
Caltech Social and Information Sciences Lab Seminar, Pasadena, CA, February 2011
University of Southern California, CS Colloquium, Los Angeles, CA, January 2011
Caltech Rigorous Systems Research Group Seminar, Pasadena, CA, November 2010

Aggregating Human Predictions Via Markets

AAAI 3rd Human Computation Workshop (*Invited*), San Francisco, CA, August 2011

A New Understanding of Prediction Markets Via No-Regret Learning

Harvard Center for Research on Computation and Society, Cambridge, MA, April 2010
UC Berkeley, Berkeley, CA, April 2010

Censored Exploration and the Dark Pool Problem

UCLA, Statistics Department Seminar, Los Angeles, CA, February 2011
Boston University, Computer Science Colloquium, Boston, MA, February 2010
UMass, Amherst, Machine Learning Lunch, Amherst, MA, December 2009
Brown University, Machine Learning Reading Group, Providence, RI, November 2009
UMass, Boston, Computer Science Colloquium, Boston, MA, November 2009
Microsoft Research New England, Econ Reading Group, Cambridge, MA, October 2009
Harvard University, EconCS Seminar, Cambridge, MA, October 2009

Learning from Collective Preferences, Behavior, and Beliefs

Harvard University, Theory of Computation/EconCS Seminar, Cambridge, MA, May 2009
UCLA, Computer Science Colloquium, Los Angeles, CA, April 2009
University of Michigan, CSE Colloquium, Ann Arbor, MI, April 2009
New York University, Computer Science Colloquium, New York, NY, April 2009
Toyota Technological Institute at Chicago, Chicago, IL, March 2009
Cornell University, Computer Science Colloquium, Ithaca, NY, March 2009
Yahoo! Research, Santa Clara, CA, March 2009
UC Berkeley, Center for Intelligence Systems Seminar, Berkeley, CA, February 2009
Duke University, Computer Science Colloquium, Durham, NC, February 2009
Microsoft Research New England, Cambridge, MA, January 2009

Learning from Collective Behavior

Rutgers University, Computer Science Colloquium, Piscataway, NJ, March 2008

Regret to the Best Vs. Regret to the Average

Yahoo! Research, New York, NY, January 2007

Selected Press

Featured in "The Women Changing the Face Of AI," Fast Company, August 2016

Interviewed for season 2, episode 1 of Talking Machines (podcast), January 2016

Awards and Honors

Presidential Early Career Award for Scientists and Engineers (PECASE), "the highest honor bestowed by the United States Government on science and engineering professionals in the early stages of their independent research careers," 2012

Symantec Term Chair in Computer Science, UCLA, 2011–2015

NSF Faculty Early Career Development (CAREER) Award, 2011–2014

NSF Computing Innovation Fellowship, 2009–2010

Morris & Dorothy Rubinoff Award (Co-winner), presented to "a graduate degree candidate whose dissertation has resulted in or could lead to innovative applications of computer technology," University of Pennsylvania, 2009

Paper Awards

    Nominee, Best Paper Award (8 papers out of 929 submissions), 24th International World Wide Web Conference, 2015

    Best Student Paper Award, 25th Conference on Uncertainty in Artificial Intelligence, 2009

    Student Paper Award, Second Place, New York Academy of Sciences Third Annual Symposium on Machine Learning, 2008

    Outstanding Paper Award, Ninth ACM Conference on Electronic Commerce, 2008

    Best Student Paper Award, 21st Annual Conference on Learning Theory, 2008

    Student Paper Award, First Place, New York Academy of Sciences Second Annual Symposium on Machine Learning, 2007

    Best Student Paper Award, 20th Annual Conference on Learning Theory, 2007

Phi Beta Kappa, Boston University, 2002

Academic Achievement Award in Computer Science, Boston University, 2002

Boston Scholars Scholarship, Merit-based full-tuition scholarship, 1998–2002

Selected Funding

For Research Projects

    IARPA Hybrid Forecast Competition (HRL MATRICS team), Role: Advisor, 2017–2018

    CAREER: Learning- and Incentives-Based Techniques for Aggregating Community-Generated Data, National Science Foundation, IIS-1054911, Role: PI, 2011–2015

    CIFellows Project: Crowdsourcing for Science Education, Computing Research Association, CIF-B-17, Role: PI/Mentor for postdoctoral fellow Ricky Sethi, 2010–2011

    CIFellowship: Foundational Understanding of Learning from the Collective and Problems in Learning and Reasoning, Computing Research Association, CIF-246, Role: Postdoctoral fellow with mentors Yiling Chen and Leslie Valiant (Harvard), 2009–2010

For Events

    Theoretical Foundations of Social Computing, CCC visioning workshops program, Role: Co-organizer with Yiling Chen, Arpita Ghosh, and Tim Roughgarden, 2015

    Collaborative Research: Workshop for Women in Machine Learning, National Science Foundation, IIS-1036868, Role: PI with co-PI Hanna Wallach, 2010–2014

Patents Filed

Computer-Based Data Collection Using a Prediction Market with a Liquidity Reducing Cost Function. With Miro Dudík and Rafael Frongillo. US patent filed November 2014.

Computer System for Multiple User, Multiple Event Real-Time Online Wagering. With Yiling Chen, Nikhil Devanur, and David Pennock. US Patent #9947174, filed October 2014, granted April 2018.

System and Method for Automated Market Making. With Jake Abernethy and Yiling Chen. US patent filed May 2012.

Students and Postdocs Supervised

Doctoral Dissertations Supervised

Chien-Ju Ho, UCLA, 2010–2015, winner of the Google Outstanding Graduate Research Award at UCLA (next position: postdoc at Cornell; now an Assistant Professor in Computer Science at Washington University in St. Louis)

Other Students and Postdocs Supervised at UCLA

Garret Buell, MS received 2012 (next position: Software Engineer at Google)
Xinlei Chen, Cross-disciplinary Scholars in Science and Technology summer intern, 2011 (next position upon graduation: doctoral student at CMU)
Shahin Jabbari, doctoral student, 2011–2013 (next position: doctoral student at UPenn)
Xiaolong Li, MS received 2012 (next position: doctoral student at UT Austin)
Ricky Sethi, Computing Innovation Fellow, 2010–2011 (next position: postdoc at USC ISI)
Petch Wannissorn, MS received Winter 2012 (next position: MS student in Software Management at CMU)

Interns Mentored or Co-Mentored at Microsoft Research

David Alvarez Melis, MIT, 2018
Ken Holstein, Carnegie Mellon, 2018
Lily Hu, Harvard University, 2018
Rediet Abebe, Cornell, 2017
Forough Poursabzi Sangdeh, CU Boulder, 2017
Manish Raghavan, Cornell, 2017
Rupert Freeman, Duke University, 2016 and 2017
Nika Haghtalab, Carnegie Mellon University, 2016
Ryan Rogers, University of Pennsylvania, 2016
Rachel Cummings, California Institute if Technology, 2015
Ming Yin, Harvard University, 2015
Hoda Heidari, University of Pennsylvania, 2014
Chien-Ju Ho, UCLA, 2013 and 2014
Alice Gao, Harvard University, 2013

Postdocs Co-Mentored at Microsoft Research

Rupert Freeman, 2018–Present
Forough Poursabzi Sangdeh, 2018–Present
Timnit Gebru, 2017–2018 (next position: Google)
Zhiwei Steven Wu, 2017–2018 (next position: faculty at University of Minnesota)

Ming Yin, 2017–2018 (next position: faculty at Purdue)
Haipeng Luo, 2016–2017 (next position: faculty at University of Southern California)
Vasilis Syrgkanis, 2014–2016 (next position: researcher at MSR New England)
Rafael Frongillo, 2013–2014 (next position: postdoc at Harvard, then faculty at CU Boulder)

Other Ph.D. Committees

UCLA Dissertation Committees: Nick Mastronarde (EE, 2011), Mahsan Rofouei (CS, 2012), Vidyut Samanta (CS, 2012), Michael Shindler (CS, 2011)

UCLA Qualifying Exam Committees: Dawn Chen (Psychology, 2012), Jihyoung Kim (CS, 2011), Brent Longstaff (CS, 2012), Bobak Mortazavi (CS, 2012), Roozbeh Mottaghi (CS, 2010), Mahsan Rofouei (CS, 2011), Vidyut Samanta (CS, 2011), Wen-Yun Yang (Bioinformatics, 2011)

Elsewhere: Debajyoti Ray (qualifying exam, CalTech, 2011), Michael Ruberry (Harvard, 2013)

Other Professional Activities and Academic Service

Secretary-Treasurer, ACM Special Interest Group on Electronic Commerce (SIGecom), elected position, July 2015–Present

Journal Boards and Reviews

Associate Editor, ACM Transactions on Economics and Computation, 2015–Present

Guest Editor, Machine Learning Journal Special Issue on Computational Social Science and the Wisdom of Crowds, 2014

Editorial Board Member, Machine Learning Journal, 2010–Present

Editorial Board Member, Journal of Artificial Intelligence Research, 2010–2013

External Reviewer, ACM Transactions on Economics and Computation, ACM Transactions on the Web, Algorithmica, Communications of the ACM, Decision Analysis, IEEE Transactions on Neural Networks, IEEE Transactions on Signal and Information Processing over Networks, Journal of Artificial Intelligence Research, Theoretical Computer Science

Conference Organization and Committees

Co-chair (general + program), HCOMP 2019

Press Co-chair, ICML 2019

Tutorials Co-chair, NIPS 2017 and NIPS 2018 (reappointed for second year)

Workshops Co-chair, ACM EC 2017 and ACM EC 2018 (two-year term)

Steering Committee, FAT* (2017–present)

Publicity Co-chair, HCOMP 2017

Workshop Selection Committee, NIPS 2016

Local Arrangements Co-chair, ACM EC 2010

Senior/Top Level Program Committee Member/Area Chair or equivalent, AAAI (2013), ACM EC (2015, 2016), COLT (2010, 2011), HCOMP (2015, 2016), ICML (2012), IJCAI (middle level 2015), NIPS (2013, 2014, 2016), WWW (Track Co-chair, 2018), UAI (2012)

General Program Committee Member/Formal Reviewer or equivalent, AAAI (2008), ACM EC (2010, 2011, 2013), AISTATS (2009, 2012), FAT* (2019), IC2S2 (2017), ICML

(2007, 2008, 2009), IJCAI (2005, 2009), NIPS (2008, 2009, 2015), UAI (2008), WWW (2016, 2017)

Workshop Organization and Committees

TTIC Summer Workshop on Learning in the Presence of Strategic Behavior (2018)
Co-organized with Nika Haghtalab, Yishay Mansour, Tim Roughgarden, Vasilis Syrgkanis

NIPS Workshop on Learning in the Presence of Strategic Behavior (2017)
Co-organized with Nika Haghtalab, Yishay Mansour, Tim Roughgarden, Vasilis Syrgkanis

HCOMP Workshop on Mathematical Foundations of Human Computation (2016)
Co-organized with Shuchi Chawla, Chien-Ju Ho, Michael Kearns, and Santosh Vempala

CCC Visioning Workshop on Theoretical Foundations of Social Computing (2015)
Co-organized with Yiling Chen, Arpita Ghosh, and Tim Roughgarden

6th Annual New York Computer Science and Economics (NYCE) Day (2013)
Co-organized with Jason Hartline and Vahab Mirrokni

NIPS Workshop on Crowdsourcing: Theory, Applications, and Algorithms (2013)
Co-organized with Xi Chen, Nikhil Devanur, Alexander Ihler, Qiang Liu, Dengyong Zhou

ICML Workshop on Markets, Mechanisms, and Multi-Agent Models (2012)
Co-organized with Amos Storkey and Jake Abernethy

2nd NIPS Workshop on Comp. Social Science and the Wisdom of Crowds (2011)
Co-organized with Winter Mason and Hanna Wallach

NIPS Workshop on Relations Between Machine Learning Problems (2011)
Co-organized with Bob Williamson, John Langford, Ulrike von Luxburg, and Mark Reid

NIPS Workshop on Computational Social Science and the Wisdom of Crowds (2010)
Co-organized with Hanna Wallach

First Workshop for Women in Machine Learning (WiML) (2006)
Co-organized with Hanna Wallach and Lisa Wainer

Other Workshop Program Committees: AAAI Human Computation Workshop (2011, 2012), Black in AI (2018), EC Workshops on Social Computing and User Generated Content (2011, 2012, 2015), EC/WWW Workshop on Crowdsourcing and Online Behavioral Experiments (2015, 2016), Northeast Student Colloquium on AI (2007), SIGAI Career Network Conference (2015), EC Workshop on Opinion Aggregation, Dynamics, and Elicitation (2018), Women in Machine Learning Workshop (several years)

Grant Reviewer/Panelist, National Science Foundation (2010, 2011, 2013, 2015), U.S.-Israel Binational Science Foundation (2011)

Selected Departmental/Lab Service

Microsoft Research, New York City
Organizer/Co-organizer of several internal TechFest workshops and panels
Creator and Organizer, MSR-NYC Postdoc Mentoring Program, 2016–Present
Organizing committee, MSR New England/New York/Montreal Retreat, 2018
Organizing committee, MSR FATE/AI & Society Summit, 2018
Organizing committee, Microsoft Research NYC 5th Anniversary Celebration, 2017
Organizing committee, MSR New England/New York Retreat, 2014

UCLA Computer Science
Admission, TA, and Fellowship Committee, 2010–2011

Prospective Student Visit Day Coordinator, 2011, 2012

University of Pennsylvania Computer and Information Science
Graduate Student Representative, 2006–2007
Organizer, Machine Learning Lunch, 2006–2007
Organizer, CISters group for female graduate students and faculty in CS, 2005–2008

Additional Efforts to Recruit and Retain Women in Computer Science

Program Co-Chair, First Celebration of Women in Computing in Southern California (CWIC-SoCal), Santa Ana, CA, 2012

Executive Board Member, Workshop for Women in Machine Learning (WiML), 2009–2012 and 2014–2018

Senior Advisor, Workshop for Women in Machine Learning (WiML), 2018–Present

Co-founder, Workshop for Women in Machine Learning (WiML), held annually since 2006